

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

IMRA AMERICA, INC., a Michigan
corporation,

Plaintiff/Counterclaim Defendant,

v.

IPG PHOTONICS CORPORATION, a Delaware
corporation,

Defendant/Counterclaim Plaintiff.

Case No. 06-15139

DISTRICT JUDGE
ARTHUR J. TARNOW

MAGISTRATE JUDGE
MONA K. MAJZOUB

OPINION AND ORDER

The plaintiff in this patent case is a Michigan corporation (“Plaintiff” or “IMRA”) that is suing a Massachusetts-based corporation with international facilities (“Defendant” or “IPG”) for the alleged infringement of certain enumerated claims of United States Patent No. 5,818,630 (the “‘630 Patent”). The parties have reduced the number of disputed claims to four. The ‘630 Patent is titled “Single-Mode Amplifiers and Compressors Based on Multi-Mode Fibers.” The inventors are employees at Plaintiff’s Ann Arbor location. Plaintiff reports that the invention of the ‘630 Patent was a revolutionary breakthrough in the field of fiber lasers, and that “[v]irtually all of the significant companies in the fiber laser industry, except for [Defendant], have taken licenses under the ‘630 Patent” in order to use the technology. *See* Pl.’s Br. [81] at 4. Defendant makes and sells a variety of fiber lasers and amplifiers, most of which are accused of infringing the ‘630 Patent.

The ‘630 Patent is directed to a complex optical amplifier that produces a high-quality, amplified beam of light, such as those beams used in telecommunications or other industrial applications. Alternatively stated, the ‘630 invention “provides for a more precise and higher quality light beam from a fiber laser at high power.” *Id.* at 6. At the heart of this dispute is one

component of the amplifier, which the patent labels a “mode converter.” The “mode converter” is used to carefully “launch” a light beam into the input end of a “multi-mode” (“MM”) fiber in such a way that the beam is preserved in its “fundamental” (i.e. highest-energy) mode. When a light beam is in “fundamental” mode, none of its energy migrates to the other “modes” of travel supported by the fiber.

Plaintiff filed the Complaint in this action in 2006. In 2008, Defendant filed a request for examination of the ‘630 Patent, and the litigation was stayed. In mid-2009, the Patent Office confirmed the patentability of all of the claims contained in the ‘630 Patent. Defendant filed for a second examination proceeding, but the request was denied. Defendant’s subsequent request for reconsideration of the denial is now pending before the Director of Patents.

After receiving the parties’ claim construction briefs [80] and [81] and Responses [84] and [85], the Court held a hearing on June 2, 2010. After the hearing, Defendant filed a Supplemental Legal Memorandum [141], to which Plaintiff filed a Response [145]. The case is now before the Court to interpret the patent claim language as a matter of law.

I. STANDARD OF REVIEW

Adjudication of a patent infringement action entails a two-step analysis. “The first is a question of law, to be determined by the court, construing the letters-patent, and the description of the invention and specification of claim annexed to them. The second is a question of fact, to be submitted to a jury.” *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996) (internal citation omitted).

Patent “claims” are individually numbered sentences at the end of the patent that define the scope of protection provided by the patent and the extent to which the patentee is entitled to a right of exclusion. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). Disputes regarding the scope of a patent, as defined by the enumerated claims, are resolved through claim construction hearings to determine the meanings of disputed words or phrases. *See Markman*, 517 U.S. 370, 372 (1996). Because the Court’s claim construction will serve as the basis for future jury instructions and focus the liability questions for trial, it is important for

the Court to resolve any claim construction disputes raised by the parties. *See IPPV Enters., LLC v. Echostar Commc'ns Corp.*, 106 F. Supp. 2d 595, 601 (D. Del. 2000). However, the Court need not construe every limitation present in a patent's assorted claims. Rather, it must interpret only those "that are in controversy, and only to the extent necessary to resolve the controversy." *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also* Pl.'s Br. [81] at 1.¹

The focus of claim construction is on the words of the claim itself. The Court's starting point is, after reading the entire patent, to give each disputed term its plain and ordinary meaning as understood by persons of ordinary skill in the art. *See Phillips*, 415 F.3d at 1312-13. During claim construction, the Court should rely primarily on "intrinsic evidence," namely: the patent claims themselves, the specification,² and any prosecution history³ that is in evidence. *See Teleflex, Inc., v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1324-25 (Fed. Cir. 2002). To the extent that "extrinsic evidence"—such as dictionaries, treatises, or expert testimony—is not inconsistent with the intrinsic record, the Court may consult extrinsic evidence for clarification of the

¹ Here, within the single claim disputed in this action, the parties disagree as to how many terms require construction by the Court.

² The specification is a written description of the invention and may act as a dictionary for claim-construction purposes to define terms used in the claims. *Markman*, 517 U.S. at 373. It "is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315. When a claim term is defined in the specification, that definition controls. *Abbott Lab. v. Novopharm Ltd.*, 323 F.3d 1324, 1330 (Fed. Cir. 2003).

³ The prosecution history is a record of the examination of the application before the United States Patent and Trademark Office. *SSIH Equip., S.A. v. United States Int'l Trade Comm.*, 718 F.2d 365, 376 (Fed. Cir. 1983). The prosecution history may "inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim construction narrower than it otherwise would be." *Phillips*, 415 F.3d at 1317.

underlying subject matter of the patent. *See Phillips*, 415 F.3d at 1317-18. In the discussion to follow, relevant expert testimony will be considered as extrinsic evidence in conjunction with related issues raised by the intrinsic record.

II. BACKGROUND

The ‘630 Patent contains forty-nine claims, only Claim 1 of which is an independent claim. All of the potentially disputed terms, emphasized below, appear in Claim 1, which reads:

An optical amplification system, comprising:

a laser source generating an input beam having a nearly diffraction limited mode;

a multi-mode fiber amplifier;

a mode converter receiving the input beam and converting the mode of the input beam to match a fundamental mode of the multi-mode fiber amplifier, and providing a mode-converted input beam to said multi-mode fiber amplifier; and

a pump source coupled to said multi-mode fiber amplifier, said pump optically pumping said multi-mode fiber amplifier, said multi-mode amplifier providing at an output thereof an amplified beam substantially in the fundamental mode.

Pl.’s Br. [80] at 9 (emphasis in original); *see* Def.’s Br. [81] at 6.

Both parties agree that the term “mode converter” must be construed by the Court. Additionally, Defendant proposes that the three other terms emphasized above also require construction.

A. “**MODE CONVERTER**”

The term “mode converter” is at the heart of this dispute. The parties offer the following proposed constructions for the term:

Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“An element capable of matching the mode of a multi-mode amplifier fiber.”	“An optical imaging system, such as a lens system, a section of tapered fiber, or a combination thereof, capable of matching the mode of the multi-mode fiber amplifier.”

Plaintiff makes several observations in explaining its proposed construction, beginning with the idea that the claim language itself does not require that any “particular structure” be

present in order to meet the definition of a “mode converter.” *See* Pl.’s Br. at 8. Plaintiff points to Figures 5, 6, 11 and 12 of the patent, each of which “portray[s] a ‘mode converter’ using a generic box, conveying that any structure may be used.” *Id.* at 9. “Neither the claim language nor the written description of the patent *excludes* any particular type of structure to accomplish the [mode-matching] action” named in the patent. *See id.* (emphasis added). Plaintiff concludes that, thus, a “mode converter” is anything—that is, any “element”—that accomplishes the “matching of the mode of the nearly diffraction limited input beam with the fundamental mode of the multi-mode fiber amplifier.” *Id.* at 9-10. Plaintiff argues that the intrinsic evidence provides a sufficient basis for the construction of the claim, but attaches the declaration of an expert, Dr. Wayne Knox, who attests that a person of ordinary skill in the art reading the ‘630 Patent at the time of its filing would interpret the claim to have the meaning set forth by Plaintiff. *Id.* at 10.

Defendant argues that Plaintiff’s proposed construction rewrites the definition for “mode converter” set forth in the ‘630 Patent, noting that nowhere in the patent is a “mode converter” described as an “element.” *See* Def.’s Br. at 14. Furthermore, Defendant argues that “a patent claim cannot encompass all structures for performing a recited function.” *Id.* (citing *Aristocrat Tech. Australia Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008)). Defendant suggests that Plaintiff’s proposed construction would subject the claim term “mode converter” to “the so-called ‘means-plus-function’ requirement set forth in 35 U.S.C. § 112, ¶ 6.” *Id.* Elaborating that patent rights cannot be granted on purely functional terms, Defendant proposes that Plaintiff’s construction “fails to recite sufficient structure for performing the recited function.” *Id.* at 15. If Plaintiff had originally conceived of a “mode converter,” as a purely functional “element,” Defendant argues that “the term would [be] construed [under § 112] to cover *only* the examples provided in the specification for performing the function of the claim, namely, a lens system, a section of tapered fiber, or a combination thereof.” *Id.*

Supplementing the argument grounded upon § 112, Defendant offers several other reasons in support of its own proposed construction. Defendant cites to the specification of the

‘630 Patent, one section of which reads: “The mode-converter 50 can consist of any type of *optical imaging system* capable of matching the mode of the MM amplifier 52.” *Id.* at 10 (citing ‘630 Patent, 10:26-28). Defendant characterizes the phrase added to its proposed construction – i.e., “such as a lens system, a section of tapered fiber, or a combination thereof” – as “a non-limiting list of all of the examples given in the specification.” In a separate section of argument, Defendant points to terms developed during the Patent Office’s reexamination of the ‘630 Patent to support its proposed construction now.⁴ *See id.* at 11-12. Defendant also seeks to draw terminology from another patent, the ‘511 patent, which was subsequently created by the inventors of the ‘630 Patent. *Id.* at 12-13.

In response, Plaintiff argues that Defendant attempts improperly to limit the scope of the term “mode converter” by reading a limitation from an example in the specification into Claim 1. *See Pl.’s Resp.* at 2. Alternatively stated, Plaintiff suggests that Defendant errs in drawing its proposed definition of a “mode converter” from a single isolated example in the specification. *Id.* at 7. Plaintiff notes that the part of the specification cited by Defendant–“the mode-converter 50 *can* consist of any type of *optical imaging system*”–uses the word “can,” not “is.” Furthermore, Plaintiff argues that the “tapered single-mode fiber” term, which Defendant seeks to integrate into the claim construction, is not an example of an “optical imaging system,” at all. *Id.* at 4. Plaintiff also provides the example of a “Bragg grating,” which would be understood as a “mode converter” by those of skill in the art, but which cannot be considered an “optical imaging system.” *Id.* at 6. The ‘630 Patent specification “specifically describes the use of a Bragg grating as a mode converter.” *See id.*

Finally, responding to Defendant’s § 112 argument, Plaintiff argues that the “means-plus-function” test simply does not apply. *See id.* at 9-10. Plaintiff reminds the Court that the word “element” is *not* actually written into the patent Claim. Rather, Plaintiff suggests that the parties actually agree that the existing term “mode converter” *is* structural, not functional, Plaintiff

⁴ However, it does not appear that a “mode converter” was ever explicitly defined as an “optical imaging system” during the Patent Office’s examination proceedings.

having listed several exemplary structural embodiments that can serve as mode converters. *Id.* Plaintiff further notes that generally, a patent limitation must actually use the word “means” in order for the “means-plus-function” test to be invoked. *Id.* at 10 (citation omitted).

Indeed, “a claim term that does not use ‘means’ will trigger the rebuttable presumption that 35 U.S.C. § 112, ¶ 6 does not apply.” *Depuy Spine, Inc. v. Medtronic Sofamore Danek, Inc.*, 469 F.3d 1005, 1023 (Fed. Cir. 2006). Here, the Court finds that Defendant has not rebutted the absence of the term “means” such that the statute should apply. As written, the claim includes *not* the word “element,” but the technical term “mode converter,” to which the Court must ascribe meaning. The means-plus-function test, perhaps invoked in an attempt “to narrow the scope of [the] patent to the particular technologies disclosed in the specification,” is inapplicable here as a threshold determination, and will not be discussed further. *See Patent Case Management Judicial Guide* § 5.2.3.5.

B. OTHER TERMS

Defendant seeks the Court’s construction of three other terms in Claim 1, while Plaintiff urges that the Court simply attribute “ordinary meaning” to each term. Defendant faults Plaintiff’s failure to offer alternative constructions for the terms at issue.⁵ *See* Def.’s Resp. at 15-16.

Defendant cites the record to support the following constructions:

Claim Language	Defendant’s Proposed Construction
“converting the mode of the input beam to match a fundamental mode of the multi-mode fiber amplifier”	“converting the mode of the input beam to cause it to match a fundamental mode of the multi-mode fiber amplifier”
“mode-converted input beam”	“an input beam whose mode has been converted to match a fundamental mode of the multi-mode fiber amplifier”

⁵ For claim construction purposes, the Court considers these terms “disputed,” even if it might be decided that no change should be made to the language as written.

“an amplified beam substantially in the fundamental mode”	“an amplified beam having substantially all of its energy content in the fundamental mode”
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See Def.’s Br. at 16-20.

III. DISCUSSION

The objective of claim construction is “to instruct the jury on what the claim means from the perspective of a person having ordinary skill in the art,” and where that perspective would add nothing to the analysis, the Court is not required “to construe terms for the sake of construction.” *Patent Case Management Judicial Guide* § 5.2.3.1 (2009). While construction of technical terms is “clearly appropriate,” it is less likely to be required for “non-technical terms . . . terms of degree . . . [or where] ‘construing’ a claim term would involve simply substituting a synonym for the claim term.” *Id.*

Here, Defendant asks the Court to construe three non-technical terms, presumably in order to provide additional clarity to the disputed claim. See *Markman* Hr’g Tr. at 97 (“[I]t’s perfectly appropriate to use the claim construction process to make a claim term clear.”). Plaintiff argues that not only would construction of the non-technical terms not serve to clarify the claim, but that Defendant’s proposed constructions threaten to “inject” meaning that is not fairly inferred from the language of the patent. See *id.* at 38-39 (arguing, for example, that the patent contains no statement of a “causal relationship” in the beam conversion process).

“Construing [non-technical] claim terms with more precise language may be error, not only because it ‘imports limitations’ from the specification into the claims, but also because it can impinge on the role of the jury in resolving the question of infringement.” *Patent Case Management Judicial Guide* § 5.2.3.1.5.1; see also *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007) (“[A] sound claim construction need not always purge every shred of ambiguity. The resolution of some line-drawing problems—especially easy ones . . . is properly left to the trier of fact.”). Although the Court should construe any claim term for which there is a legitimate dispute, it is advised to be “skeptical of construing lay terms for which neither party

can produce intrinsic evidence indicating a specialized meaning.” *Id.*

After careful evaluation of the ‘630 Patent, the Court determines that the meanings of the three non-technical terms identified by Defendant are not “specialized” so as to call for further construction by the Court. Rather, to construe those terms as a matter of law would serve no clarifying purpose, would verge on constituting an “exercise in redundancy” and would risk encroachment upon the function of the jury. *See id*; *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d at 1568. The Court declines to construe the non-technical terms Defendant has identified.

Thus, the Court will construe only the term “mode converter,” which the parties agree is at the heart of this dispute. In that construction, the Court will rely primarily on “intrinsic evidence,” namely: the language of the claim to be construed, the specification, the patent’s other claims, the prosecution history in evidence, and the cited prior art. *See Teleflex*, 299 F.3d at 1324-25. To the extent that “extrinsic evidence”—here, expert declarations and the ‘511 Patent—is not inconsistent with the intrinsic record, the Court may consider those sources for clarification of the patent’s underlying subject matter. *See Phillips*, 415 F.3d at 1317-18.

A. “MODE CONVERTER”

The term to be construed—“mode converter”—appears several times in the ‘630 Patent. Most importantly, it appears as an essential term in Claim 1, here to be construed. *See* ‘630 Patent, 13:16-20. Also in the “claims” section of the patent, the term appears in dependent Claims 17, 18, and 19, in which it is specified that the “mode converter” named in Claim 1 comprises⁶ “a bulk-optics imaging system,” “a tapered single-mode fiber,” or a combination thereof. *See* ‘630 Patent, 14:18-26.

Additionally, in the specification portion of the patent, which describes nine preferred embodiments of the invention, the term “mode converter” appears in the explication of the

⁶ The Federal Circuit has “consistently held that the word ‘comprising’ is an open transition phrase.” *See AFG Indus., Inc. v. Cardinal IG Go., Inc.*, 239 F.3d 1239, 1245 (Fed. Cir. 2001). “When a claim uses an ‘open’ transition phrase, its scope may cover devices that employ additional, unrecited elements.” *Id.* at 1244.

“second embodiment,” as follows:

The mode-converter 50 can consist of any type of optical imaging system capable of matching the mode of the MM amplifier 52. For example, a lens system may be employed. Alternatively, a section of tapered fiber may be employed, such that the output mode at the end of the tapered fiber is matched to the mode of the MM amplifier fiber 52. In this case, the mode-converter can be spliced directly to the MM fiber 52 producing a very compact set-up.

‘630 Patent, 10:26-33. This “second embodiment” is illustrated in FIG. 5 of the patent.

Although the language describing the third, eighth and ninth embodiments does not include the term “mode converter,” the corresponding illustrations in FIG. 6, FIG. 11, and FIG. 12, respectively, all include a graphic representation of a mode converter.

Finally, the patent’s treatment of the prior art includes a discussion of a demonstration of “unchirped fiber Bragg gratings” which had been “blazed to allow their use as mode-converters, i.e., to couple the fundamental mode to a higher-order mode.” *See* ‘630 Patent, 3:34-41.

In that context, Plaintiff proposes to define “mode converter” as “an element capable of matching the mode of a multi-mode amplifier fiber.” Defendant would define the term as “an optical imaging system, such as a lens system, a section of tapered fiber, or a combination thereof, capable of matching the mode of the multi-mode fiber amplifier.” Thus, the parties agree on the construction of the final phrase of the term: “capable of matching the mode of a multi-mode amplifier fiber.” The Court must decide whether construction of the term “mode converter” should include the word “element,” employ the phrase “optical imaging system, such as a lens system, a section of tapered fiber, or a combination thereof,” or use different language altogether.

Intrinsic Evidence: the Specification

Claims “must be read in view of the specification, of which they are a part.” *Phillips*, 415 F.3d at 1315 (quoting *Markman*, 52 F.3d at 979). The specification “can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format.” *Scimed Life Sys., Inc. v. Adv. Cardiovascular Sys.*, 242 F.3d 1337, 1344 (Fed. Cir. 2001). “The descriptive part of

the specification aids in ascertaining the scope and meaning of the claims inasmuch as the words of the claims must be based on the description. The specification is, thus, the primary basis for construing the claims.” *Phillips*, 415 F.3d at 1315 (quoting *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985)). A claim term “can be defined only in a way that comports with the instrument as a whole,” but it must also be construed in light of the general principle that “the claims made in the patent are the sole measure of the grant.” *Id.*, 415 F.3d at 1312, 1316 (internal citations omitted); *see also Kara Tech., Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1347-48 (Fed. Cir. 2009) (“The claims, not specification embodiments, define the scope of patent protection. The patentee is entitled to the full scope of his claims,” and the Court “will not limit him to his preferred embodiment or import a limitation from the specification into the claims.”)

Here, Plaintiff proposes use of the word “element” in construing the disputed language because, Plaintiff argues, “no particular structure is required” by the specification’s usages of the term “mode converter.” *See* Pl.’s Br. at 8. Pointing to the specification portion of the ‘630 Patent, Plaintiff notes that Figures 5, 6, 11 and 12 all “portray a ‘mode converter’ using a generic box, conveying that any structure may be used,” and further, that no particular type of structure is excluded from the definition of “mode converter.” *Id.* at 9. Defendant objects to the use of “the generic term ‘element’” because that term appears nowhere in the ‘630 patent, and Defendant believes a construction employing the term “element” would impermissibly broaden the claims beyond the scope originally written into the ‘630 Patent. *See* Def.’s Br. at 14.

Defendant asserts that the patent specification explicitly defines “mode converter” as an “optical imaging system,” and that “that definition controls.” *See* Def.’s Br. at 10; *and cf. Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004) (“Absent a clear disavowal or contrary definition in the specification or the prosecution history, the patentee is entitled to the full scope of its claim language.”). Defendant further notes that at the embodiment shown in FIG. 1 of the patent involves a “two-lens telescope [that] is an example of an optical imaging system.” *Id.* at 11. Plaintiff objects to Defendant’s characterization as a

“definition” of the specification sentence containing the phrase “optical imaging system,” arguing that “[a]ny express definition of a claim term must be *clearly set forth* in the written description.” See Pl.’s Resp. at 7 (Plaintiff’s emphasis); see also *Vitrionics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (“The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication.”). Plaintiff argues that, in the absence of a clear definition, the Court should not import limitations from the specification into the claim, and that “although the specification often describes very specific embodiments of the invention, it is improper to confine the claims to those examples.” See Pl.’s Br. at 11 (quoting *Phillips*, 413 F.3d at 1323).

Plaintiff further protests Defendant’s proposed importation of the phrase “optical imaging system” from the patent specification into the proposed construction of the term “mode converter,” suggesting that to do so would be “inconsistent with the patent specification, which expressly calls out ‘an optical imaging system’ as *an example* of the recited mode converter.” See Pl.’s Br. at 8, 10. (emphasis by Plaintiff). That is, Plaintiff argues that “[t]he patent specification thus makes clear that a ‘mode converter’ *can be* an optical imaging system. But it does not state that a mode converter *must be* an optical imaging system.” *Id.* (emphasis added). Specifically, Plaintiff cites the patent’s second embodiment, which is illustrated by FIG 5 of the patent, and which provides that:

[t]he mode-converter can consist of any type of optical imaging system capable of matching the mode of the MM amplifier. For example, a lens system may be employed. Alternatively, a section of tapered fiber may be employed, such that the output mode at the end of the tapered fiber is matched to the mode of the MM amplifier fiber.

See Pl.’s Resp. at 6; ‘630 Patent at 10:26-32. By Plaintiff’s interpretation, the “lens system” in this passage is an “example” of an “optical imaging system,” but “a section of tapered fiber” is not; rather, Plaintiff argues that “a section of tapered fiber is *a separate exemplary embodiment* from a lens system a lens system as taught by [FIG 1].” See Pl.’s Resp. at 6 (emphasis by Plaintiff).

To some extent, the second embodiment is worded ambiguously enough to support either

Defendant's or Plaintiff's position. That is, as Defendant suggests, it could be conceptualized as follows: "the mode-converter can consist of an optical imaging system, of any type, and of which two examples are provided." Alternatively, as Plaintiff suggests, it could be conceptualized as follows: "the mode-converter *can* consist of any type of optical imaging system, and two examples are provided, or it need not consist of any type of optical imaging system at all."

As a matter of grammar, the Court favors Defendant's interpretation. The syntactic structure—"For example, [one thing] may be employed. Alternatively, [another thing] may be employed . . ."—strongly implies that both things listed are examples of the same preceding category. Here, that larger category is an "optical imaging system" that "can" operate as a mode converter.

However, the Court rejects Defendant's contention that the patent's second embodiment provides a decisive "definition" of the term "mode converter." The text of the second embodiment contains no terminology—such as the word "is" or, ideally, the phrase "defined as"—clear enough to compel the conclusion that Defendant suggests. Rather, in the second embodiment, a mode converter "can" consist of an optical imaging system. On one hand, this patent recites nine embodiments, and only the second embodiment addresses the "mode converter" claim term. However, the Federal Circuit has "expressly rejected the contention that [even] if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment," and similarly, the Court must hesitate to limit the meaning of "mode converter" to the text of the sole embodiment in which it is raised. *See Phillips*, 415 F.3d at 1323.

Here, against the strong background principle that, in order to accord the patentee "the full scope of his claims," the Court must not "limit [Plaintiff] to [its] preferred embodiment or import a limitation from the specification into the claims," the Court cannot find that the "mode converter" at issue in this patent *must* be an "optical imaging system" such that the latter term should be included in the claim construction. *See Kara Tech.* 582 F.3d at 1347-48. To do so would impermissibly narrow the scope of the claim.

The Court further recalls that, although the language describing the third, eighth and ninth embodiments does not include the term “mode converter,” the corresponding illustrations in FIG. 6, FIG. 11, and FIG. 12, respectively, all include a graphic representation of a mode converter. It is clear that the mode converter is conceived as a discrete component in the “optical amplification system” described in Claim 1. Although Defendant notes that the word “element” is nowhere to be found in the patent language, it is difficult to think of a more neutral term to be used in claim construction.

Despite the ambiguity of the second embodiment, and although the Court finds this a very close question, intrinsic evidence drawn from the specification weighs towards the adoption of Plaintiff’s proposed construction.

Intrinsic Evidence: Claim Differentiation

Under the doctrine of “claim differentiation,” “each claim in a patent is presumptively different in scope.” *RF Del., Inc. v. Pac. Keystone Techs., Inc.*, 326 F.3d 1255, 1263 (Fed. Cir. 2003); *see also Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1369 (Fed. Cir. 2007). For claim construction purposes, claim differentiation provides that “the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Phillips*, 415 F.3d at 1315; *see also Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1380 (Fed. Cir. 2006) (“an independent claim should not be construed as requiring a limitation added by a dependent claim”); *Dow Chem. Co. v. United States*, 226 F.3d 1334, 1341-42 (Fed. Cir. 2000) (concluding that an independent claim should be given broader scope than a dependent claim to avoid rendering the dependent claim redundant). “That presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and a dependent claim.” *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007). However, “[c]laim differentiation is a guide, not a rigid rule.” *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991). Application of the doctrine “can not broaden claims beyond their correct scope.” *Curtiss-Wright*, 438 F.3d at 1380-81 (Fed. Cir. 2006).

Plaintiff points generally to Dependent Claim 17 (“wherein said mode converter comprises a bulk-optics imaging system”), Dependent Claim 18 (“wherein said mode converter comprises a tapered single-mode fiber”), Dependent Claim 19 (“wherein said mode converter comprises a combination of a bulk-optics imaging system and a tapered fiber”), and Dependent Claims 50 and 51⁷ to “demonstrate that the ‘mode converter’ limitation should be interpreted broadly.” *See* Pl.’s Br. at 11 & Ex. A. Furthermore, relying on the expert opinion⁸ of Dr. Knox, Plaintiff argues that the “tapered single-mode fiber” recited in Dependent Claims 18 and 19 “is not an optical imaging system, in the general sense of the term,” and that thus Dependent Claims 18 and 19 cannot be reconciled with Defendant’s proposed definition of “mode converter” as “an optical imaging system.” *See* Pl.’s Resp. at 4 & Ex. F ¶ 13.

Here, although claim differentiation is not dispositive, application of the doctrine weighs in Plaintiff’s favor. That is, the doctrine would suggest that the limitations applied to the term “mode converter” (using an open-ended “comprises”) in Dependent Claims 17, 18, and 19, should not be read to limit the scope of Independent Claim 1.

Intrinsic Evidence: Prosecution History

“The prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim construction narrower than it otherwise would be.” *Phillips*, 415 F.3d at 1317.

Here, as discussed immediately above, Plaintiff invokes Dependent Claims 50 and 51 to

⁷ “Claims 50 and 51 recite embodiments that include an optical fiber spliced to an input of the multimode fiber.” Pl.’s Br. at 11. The two claims were issued at Plaintiff’s request during the patent reexamination process. *See* Markman Hr’g Tr. at 33:35 - 34:13. Plaintiff argues that the added claims “talk about where the mode converter comprises an optical fiber spliced to the input of said multi-mode fiber . . . that splicing is not an optical imaging system under what has been described by Dr. Knox.” *Id.*

⁸ The dependent claims are intrinsic evidence for purposes of claim construction. However, expert *opinions* regarding the meaning of the dependent claims must be considered extrinsic evidence.

“demonstrate that the ‘mode converter’ limitation should be interpreted broadly.” *See* Pl.’s Br. at 11. “Claims 50 and 51 recite embodiments that include an optical fiber spliced to an input of the multimode fiber.” Pl.’s Br. at 11. The two claims do not appear in the ‘630 Patent that is now before the Court, but were issued at Plaintiff’s request during the patent re-examination process. *See* Markman Hr’g Tr. at 33:35 - 34:13. Plaintiff argues that the added dependent claims “talk about where the mode converter comprises an optical fiber spliced to the input of said multi-mode fiber . . . [and] that that splicing is not an “optical imaging system” under what has been described by Dr. Knox.” *Id.* Because the reexamination proceeding confirmed the patentability of the added claims, Plaintiff argues that those claims are entitled to a broad scope of interpretation. *See* Pl.’s Resp. at 7.

Defendant also points to the prosecution history to suggest that during reexamination of the ‘630 patent, Plaintiff’s expert confirmed that a “mode converter” necessarily involves an optical imaging system. *See* Def.’s Br. at 12 & Ex. 2 (relying on a declaration by expert by Philip Bucksbaum: “[t]o achieve the focusing depicted in this figure, the claimed mode converter must be an optical imaging system”). Plaintiff responds that Defendant’s citation was actually excerpted from Plaintiff’s effort during reexamination proceedings to “distinguis[h] a prior art reference, Yang, that disclosed the use of a lens at the input of a fiber amplifier. [Plaintiff] discussed the prior art’s use of a lens and explained why the reference did not disclose a ‘mode converter’ at all.” Pl.’s Resp. at 8.

Beyond the conflicting expert statements, the Court finds nothing conclusive in the prosecution history that would support the imposition of a narrowing construction on the term “mode converter” as it is to be construed in the ‘630 Patent that is now before the Court.

Intrinsic Evidence: Cited Prior Art

A patent’s citation to “prior art” can be significant for claim construction purposes insofar as it may show a patentee’s “emphasis on the importance of a particular feature [of the invention] in solving the problems of” earlier, related inventions. *See Patent Case Management Judicial Guide* § 5.2.3.2.3.2. Statements distinguishing the prior art must be sufficiently clear to

warrant a narrowing construction. *Ventana Med. Sys., Inc. v. Biogenex Labs., Inc.*, 473 F.3d 1173, 1180-81 (Fed. Cir. 2006).

Here, the ‘630 Patent cites as prior art an article “by Strasser et al . . . ‘Reflective-mode conversion with UV-induced phase gratings in two-mode fiber’ . . . which described using Bragg phase gratings as a mode converter.” Pl.’s Resp. at 2 (citing ‘630 Patent at 3:35-37). The ‘630 Patent describes the Strasser article as having demonstrated “unchirped fiber Bragg gratings” that “were blazed to allow their use as mode-converters, i.e. to couple the fundamental mode [of optical fibers] to a higher-order mode.” ‘630 Patent at 3:34, 39-41. Plaintiff’s expert, Dr. Knox, opines⁹ that the ‘630 Patent’s citation to the Strasser article’s description of Bragg gratings used as mode converters shows “that those skilled in the art were familiar with mode converters for other applications” at the time of the ‘630 Patent’s filing, and that “[m]any other types of mode converters for other applications were known to those skilled in the art at the time of the invention.” Pl.’s Resp. at Ex. F, ¶ 10.

“This is not a case in which the inventor's distinguishing the invention over the prior art in the specification results in a disavowal of coverage by the inventor of features in the prior art.” *Cf. Ventana Med. Sys.*, 473 F.3d at 1180-81. In other words, here, the inventors did not invoke Bragg gratings used as mode converters for the purpose of distinguishing the features of some new, improved mode converter of their own. Rather, it is in the opinion Plaintiff’s expert that the Court should infer from the reference to Bragg gratings that the meaning of “mode converter” is not limited to an “optical imaging system.” To the extent that it does not contradict intrinsic evidence already discussed above, the Court takes note of Dr. Knox’s opinion as extrinsic evidence.

Extrinsic Evidence: The ‘511 Patent

“Absent a formal relationship or incorporation during prosecution, the new-matter

⁹ The Court relies on prior art, such as the Strasser article, as intrinsic evidence for purposes of claim construction. However, as noted above, Dr. Knox’s *opinion* regarding the prior art cited in the ‘630 Patent must be considered extrinsic evidence.

content of [a latter-filed patent] is not available to construe the claims of [an earlier-filed] patent.” *Goldenberg v. Cytogen, Inc.*, 373 F.3d 1158, 1168 (Fed. Cir. 2004). Thus, a patent from a different patent family cannot be considered “intrinsic evidence” for purposes of claim construction. *See id.* at 1167-68.

Nevertheless, Defendants urge the Court to consider the inventors’ U.S. Patent No. 7,190,511 (“the ‘511 Patent”), which was filed about a year after the ‘630 Patent, as “further extrinsic evidence confirming that persons of skill in the relevant field, including the ‘630 inventors themselves, consider a ‘mode converter’ to be ‘an optical imaging system.’” *See* Def.’s Br. at 13 & n.3. Defendants argue that “[t]he inventors of the ‘630 patent have also confirmed and reiterated in [the ‘511 Patent] that a ‘mode converter’ employs an optical imaging system to match the mode of a multimode fiber amplifier.” *See* Def.’s Br. at 12-13. Specifically, the background language of the ‘511 Patent states: “[i]n [the ‘630 Patent], the loss of spatial beam quality in MM fiber amplifiers is prevented by excitation of the fundamental mode via the use of appropriate mode-matching bulk optics or fiber tapers.” *Id.* at Ex. 6 (‘511 Patent, 3:12-16). Defendant asks the Court to infer that the inventors, as persons skilled in the art, thus generally understood the term “mode converter” to mean “an optical imaging system.”

The ‘511 Patent contains neither the term “mode converter” nor the phrase “optical imaging system.” As extrinsic evidence, it provides an insufficient basis for the Court to adopt the definition Defendant proposes.

IV. CONCLUSION

The Court has reviewed the record, pleadings and hearing transcripts, and has considered in depth the parties’ arguments regarding claim construction. For the reasons discussed above,

The Court **DECLINES TO CONSTRUE** the three non-technical terms identified by Defendant.

Further, **IT IS ORDERED** that Plaintiff’s proposed construction of the term “mode

converter” shall be **ADOPTED**. Specifically, in the context of this litigation and for purposes of jury instruction, a “mode converter” shall be defined as “an element capable of matching the mode of a multi-mode amplifier fiber.”

SO ORDERED.

S/ARTHUR J. TARNOW

Arthur J. Tarnow

Senior United States District Judge

Dated: December 27, 2010

I hereby certify that a copy of the foregoing document was served upon counsel of record on December 27, 2010, by electronic and/or ordinary mail.

S/LISA M. WARE

Case Manager